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The Commonwealth's Solid Waste Masterplan:

"Toward a System of Integrated Solid Waste Management"

First Draft Prepared by

The Commonwealth of Massachusetts
The Executive Office of Environmental Affairs
Department of Environmental Quality Engineering
Division of Solid Waste Management
1 Winter Street, 4th floor
Boston, MA 02108
617 292-5989

December 20, 1988

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Dear Citizen:

Today, the Commonwealth unveils the framework of a solid waste solution. With release of this, the first of three versions of a blueprint for integrated solid waste management in Massachusetts, the Department of Environmental Quality Engineering spurs the public discourse necessary to achieve an effective long-term strategy that makes the best use of what we do not need to bury and burn, and that ensures the safe disposal of that which we must.

We are accomplishing much in our efforts to find environmentally sound solutions for the ton of trash each citizen produces every year. We have:

- Enacted a comprehensive Solid Waste Act of 1987 which for the first time provides the authority and funding — $260.5 million — that enables DEQE to work with cities, towns and the private sector to solve disposal problems;
- Launched construction on the first regional recycling facility, in Springfield, and trained one in four communities in how to compost their leaf and yard waste;
- Substantially increased solid waste handling capacity over the past five years;
- Issued clear and protective criteria for siting new waste facilities; and
- Identified and commenced assessment of 38 landfills which may threaten to pollute water supplies.

This plan provides the most comprehensive picture ever developed of how we handle our solid waste today, and how we are likely to handle it in the future. But we still have much to do:

- The plan calls for handling 45% of our waste through source reduction and recycling by the year 2000, a commitment which will require extraordinary efforts to build infrastructure and develop markets;
- The plan projects that even with aggressive source reduction and recycling, accelerating landfill closures could mean that the Commonwealth will not have enough processing capacity, beginning in 1992; and
- The plan describes in detail the problem wastes — construction debris, metal goods — for which we do not have a solution — the final plan must incorporate solutions.

With the issuance of this draft plan, I extend an invitation to municipal officials, the private waste industry, environmentalists, and the general public to join us in answering the challenges and drafting a final solid waste plan which will build an integrated waste management system to serve us well into the 21st century. With your help we can ensure that we are, for once, not just looking for the next place to throw things away.

Sincerely,

Daniel S. Greenbaum
Commissioner

DSG/jmb

I. Introduction and Executive Summary

For most Massachusetts residents, garbage disposal has been out-of-sight and out-of-mind. In urban areas, trash left at the curbside in the morning disappears, as if by magic, in the evening. Local landfills in rural areas are almost always placed in the farthest corner of the town. Citizens and municipal officials have sought what at least appeared to be the simplest and least costly solutions. But the easy option always seemed out of reach. From dumps to open burning, and sanitary landfills to early attempts at incineration, communities found themselves trapped in a spiral in which one era's solution became the next era's environmental problem. In almost every case, cities and towns eventually abandoned one type of facility for what was then thought to be a better one. Skyrocketing land costs and increased requirements for pollution controls dramatically increased the cost of each generation of facilities.

While the actual process of garbage disposal may still be out-of-sight, its burden on municipal budgets no longer allows it to be out of mind. The failures of the past have taught us that there is no one simple solution or one technology to solve the trash problem. Most important, we are learning that much of our trash problem could be our trash resource.

The Solid Waste Master Plan

The Solid Waste Act of 1987 gave the Department of Environmental Quality Engineering the mandate and the challenge of drafting a solid waste master plan for the Commonwealth. This draft plan, the first of three versions mandated by the legislation, responds to the challenge of building a solid waste management system which puts the simple "solutions" of the past behind us.

This plan provides information on current conditions: how much solid waste is handled and where it is disposed; what authority and responsibility different parties have in this process; and why we experience difficulties in providing safe and adequate disposal. It presents a vision of regional facilities which are well run, benign, and extract as much value from the waste stream as is possible. The plan describes action: short-term, focused activities by DEQE to relieve current problems and long-term, to achieve the right mix of solid waste management solutions.

The issue of this master plan begins a dialogue, a one year process intended to allow citizens, State and municipal officials, the private waste industry and interested groups to take hold of the future to ensure the most rational, environmentally sound and cost-effective disposal of our solid waste. We can no longer afford the simple solution that becomes tomorrow's problem. Through a series of public meetings around the Commonwealth, DEQE staff will refine our understanding of current solid waste disposal practices and assist in the formulation of regional solutions which look to reduce, re-use and recycle as much of the waste stream as possible. Once completed, a year from now, the master plan will guide DEQE's allocation of more than a quarter billion dollars authorized under the Solid Waste Act of 1987.

The Challenge:

DEQE faces a complicated challenge in designing and managing the State's solid waste management system. There are many concerns:

- Strong support for recycling exists, but many communities are skeptical about whether sufficient markets for recyclables can be developed for the long-term.
- The pollution risks posed by current disposal methods have created a climate of uncertainty for municipal decision-makers, regulators, and members of the solid waste industry.
- Despite the operation of eight waste combustion incineration facilities, aggressive recycling and composting, and about 200 active landfills, the State faces an 8% capacity shortage by 1992. The disposal of appliances, construction debris, and other problem wastes is a particular challenge.
- Illegal dumping is on the increase.
- Communities cannot keep up with the cost of proper solid waste management. The cost of proper closure of landfills is often considerably beyond the range of Proposition 2½ constrained municipal budgets.

New Directions for the Year 2000

Meeting these challenges requires new directions and initiative. This plan describes a new direction — a system of integrated waste management — first outlined by Governor Dukakis in 1985. The plan proposes to tap the growing multi-community efforts to plan integrated solid waste management solutions in each region of the State, and to promote — for the first time — substantial State funding to implement those solutions.

Integrated waste management sets a clear priority on reducing and re-using waste rather than disposing it. It requires that the Commonwealth:

- reduce the amount of waste produced (particularly that which is toxic either in production or disposal);
- recycle (including compost) appropriate components of the waste stream;
- combust the balance of the waste stream which cannot be reduced or recycled, but which can be safely incinerated;
- landfill only those wastes which cannot reasonably be reduced, recycled, or burned.

In keeping with integrated solid waste management, this plan projects that, at a minimum, 45% of the Commonwealth's trash will be handled through source reduction, recycling and composting by the year 2000. And it sets a goal of phasing out all direct land disposal of solid waste by that same date, leaving landfills to handle primarily the bypass from waste processing facilities, and those problem wastes which cannot be first recycled or safely combusted.

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Immediate Action

While this plan describes in detail long-term plans for building an integrated solid waste management system, it also prescribes immediate action to address the Commonwealth's solid waste needs.

- DEQE will work with the Solid Waste Commission to establish source reduction initiatives which will reduce the Commonwealth's current waste generation rate by at least 10 percent by the year 2000.
- The Commonwealth will establish recycling as an integral component of solid waste management. DEQE will spend $60.5 million to develop three Materials Recovery Facilities (in Springfield, Cambridge, and Boston), and to assist communities in either procuring private services or in constructing their own additional recycling and composting facilities, resulting ultimately in a super network of such facilities throughout the state. DEQE has initiated an extensive market development program to attract industrial users of recyclables to the Commonwealth. Development activities will establish viable means to recycle plastics and tires and to compost the organic component of municipal solid waste (MSW) including sludge, agricultural and industrial waste.
- DEQE is training local officials in leaf and yard waste composting and administering a $7 million grant program to implement composting. By the year 1992, leaves will be banned from solid waste facilities when all communities are composting. DEQE will institute additional waste bans of recyclables as alternatives to disposal become available.
- DEQE will survey state-owned land to identify sites that are well-suited for regional-scale solid waste processing facilities. At the same time, the Department will work with the private sector to develop a large-scale non-burn facility on state-owned or other land.
- For the next year, DEQE will not issue operating permits to solid waste combustion facilities. During these twelve months, the Department will assess the need for, and characteristics of, the many current waste combustion proposals. At the conclusion of this year and as part of the final master plan, DEQE will permit only those facilities where there is a need for new capacity and whose proposals represent the maximum possible recycling and reduction of waste.
- DEQE, with the assistance of its advisory committees and the commitment of extensive technical and financial resources, has drafted and will promulgate new facility regulations for landfills, general facilities, waste-to-energy and transfer stations.
- DEQE will reduce illegal dumping of waste through the use of a newly created Environmental Crimes Unit and through cooperative initiatives with the Attorney General, local authorities, and District Attorneys.
- A comprehensive assessment program has identified the landfills of top concern for closure and clean-up. When complete, the study will identify contamination problems at all of the Commonwealth's active and inactive landfills. Within five years, remediation will be underway or complete at all facilities posing high risk to actual and potential public drinking water supplies.

The Next Steps:

The Solid Waste Act of 1987 mandated extensive public review for this plan. Over the next six months, DEQE will hold public hearings and meetings, undertake additional research and revise this plan. A second draft will be released in June, 1989. After an additional period of public comment, the final master plan will be released a year from now.

In preparing the final plan, DEQE will be answering key questions which have not been answered in this first draft. Among them are:

- ▶ How can we build a creative partnership with the private sector to quickly implement recycling and other waste reduction initiatives while maintaining the maximum financial incentives for recycling?
- ▶ How will we meet unmet capacity needs for 1992, 1996, and the year 2000?
- ▶ How can we implement solutions to re-use problem wastes such as tires, metal goods, and construction debris?
- ▶ What steps must we take to achieve a goal of no direct landfill disposal of unprocessed waste by the year 2000?

At the conclusion of this year, the final plan will answer these questions, and provide a blueprint for building an integrated solid waste management system for the twenty-first century.

Summary of the Plan

The following is a brief summary of the plan:

Chapter 2. Trends and Directions summarizes current waste handling across the State and projects trends to the year 2000. Massachusetts citizens currently generate 6.1 million tons of municipal solid waste each year. Without waste reduction measures, this is expected to grow to nearly 7 million tons by the year 2000.

Municipal solid waste (MSW) is composed of residential (48%) and commercial (52%) waste streams. It generally contains large amounts of paper (almost 40%) and leaf and yard wastes (almost 18%). It also contains metals, glass, food wastes and plastics.

Recycling:

Today, 7% of the municipal solid waste stream is recycled through the State Bottle Bill and local recycling programs. One hundred twenty-nine Bay State communities are recycling, approximately 70 have composting programs and 54 have passed mandatory ordinances in anticipation of developing Materials Recovery Facilities (MRF) in their areas. By the year 2000, it is projected that nearly all Massachusetts communities will be recycling and composting, and that these technologies will handle nearly 35% of the waste.

Combustion:

Nearly 31% of the MSW stream will be combusted in 1988 at the six existing facilities in the Bay State. Capital costs for waste-to-energy facilities average more than $150 million for a 1,500 ton-per-day regional facility, resulting in tipping fees averaging $40 to $50 per ton for communities with a long-term contract, and $75 per ton for disposal on the spot market. In 1989, two additional facilities will come on line bringing the total waste combusted to nearly 50%. All eight of these facilities are projected to still be operating in the year 2000.

Landfills:

It is expected that due to capacity and water contamination problems, most of today's municipal solid waste landfills will be forced to close by 1996. It is a goal of the plan to replace these landfills with a few larger regional facilities, and reduce reliance on this method of disposal greatly by the year 2000.

Problem Wastes:

Municipal solid waste is the largest, but not the only component of the solid waste stream. In addition to municipal solid waste, there are also problem wastes. These wastes are best handled separately from MSW. Primarily they include sludge, construction debris, white goods and asbestos. Few states in the country have identified satisfactory long-term solutions for these wastes.

DEQE's projections suggest that even with the recycling described above, and a reduction in waste by 10%, Massachusetts will experience a capacity shortfall of 8% in 1992, rising to 12% in 2000.

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Chapter 3: Regional Profiles describes trends, problems and programs in each of the regions.

Central Region: Comprised of 80 communities, the region primarily relies on landfilling for MSW disposal. Recently, though, more and more communities have signed contracts with waste combustion facilities. Of the proposals to construct new combustion facilities in the region, two have been site assigned and are in the MEPA process. There has also been a resurgence in composting and recycling initiatives. Composting efforts have doubled since 1987. And, four groups of communities are working to site large recycling centers in their areas.

Northeast Region: Comprised of 95 communities, this region is a net exporter of municipal solid waste. It will ship approximately 1.5 million tons in 1988 to out-of-region facilities. In-region, 36% of the MSW is combusted and 13% is landfilled. Even though many communities have relatively long-term contracts for MSW processing and disposal, recycling and composting are gaining in popularity. Cambridge will be the host community to the State's second MRF. In addition, the City of Boston has completed a comprehensive assessment of its waste management options. It plans to construct a recycling center and implementation plans are currently being developed. Over 25 communities in the region are composting their leaves and yard wastes. There are several agricultural composting projects in the region as well.

Southeast Region: Comprised of 75 communities, the region relies primarily on landfilling and is also a net importer of solid waste. The waste processing and disposal facility at Rochester (SEMASS) will change this profile dramatically when it begins operations. Of particular significance is the impact it will have on municipal landfills: once SEMASS reaches full capacity (both boilers and its recycling program), reliance on local municipal landfills will decrease by 26%. The SEMASS proposal to construct a large recycling facility puts the region well on its way to achieving high levels of recycling. In addition there are many composting programs underway. Finally, Nantucket will be constructing an MSW composting facility, the first of its kind in the State, during 1989–1990.

Western Region: Comprised of 110 communities, this region is host to the first State MRF, in Springfield. In addition to a large commitment to recycling and composting, this region is also exhibiting a trend for the development of regional landfills and waste combustion facilities. Currently 89 communities rely on landfills, the majority of which are expected to close within the next three years. The pressure to find alternative capacity has resulted in a pooling of resources. For instance, 12 existing landfills currently accept solid waste from at least one other community. Also, all but 16 of the region's communities are involved in regional planning of some sort.

Chapter 4: Regional Planning describes the roles of the localities and the State in implementing the plan. The successful implementation of an integrated solid waste management system relies on the commitment and participation of communities. This plan recommends that municipal responsibilities be exercised through a series of regional entities and it describes methods for solid waste planners to evaluate their communities' solid waste disposal needs and options.

The DEQE is the Commonwealth's lead agency for solid waste management. Its powers are derived from legislation, and its specific directions are articulated through policy and regulation. Generally, DEQE:

- Establishes standards for the siting, construction, and operation of Solid Waste Facilities that are protective of the public health and environment;
- Regulates existing facilities to ensure they comply with State standards;
- Provides technical and financial assistance to municipalities to assist their efforts in planning for improved solid waste management, developing new capacity, closing old facilities, and assessing the potential environmental threat from existing or former facilities;

- Conducts research to assess available and emerging processing and disposal technologies;
- Develops new solid waste management facilities where a specific capacity need is identified; and,
- Produces a state-wide master plan for Solid Waste Management.

The Solid Waste Act of 1987 changed the siting process by calling for the immediate establishment of a uniform and comprehensive statewide solid waste siting process. The local Boards of Health retained the ultimate responsibility for siting decisions, while DEQE's role in the site assignment process was clarified and greatly expanded. DEQE promulgated regulations governing the site assignment process and established a set of site suitability criteria to be uniformly applied by all Boards of Health.

When the DEQE established the site suitability criteria, a major concern was that the siting of solid waste facilities be consistent with the general program of integrated solid waste management. To this end, the regulators require that any landfill or waste combustion facility incorporates recycling and composting into the overall design.

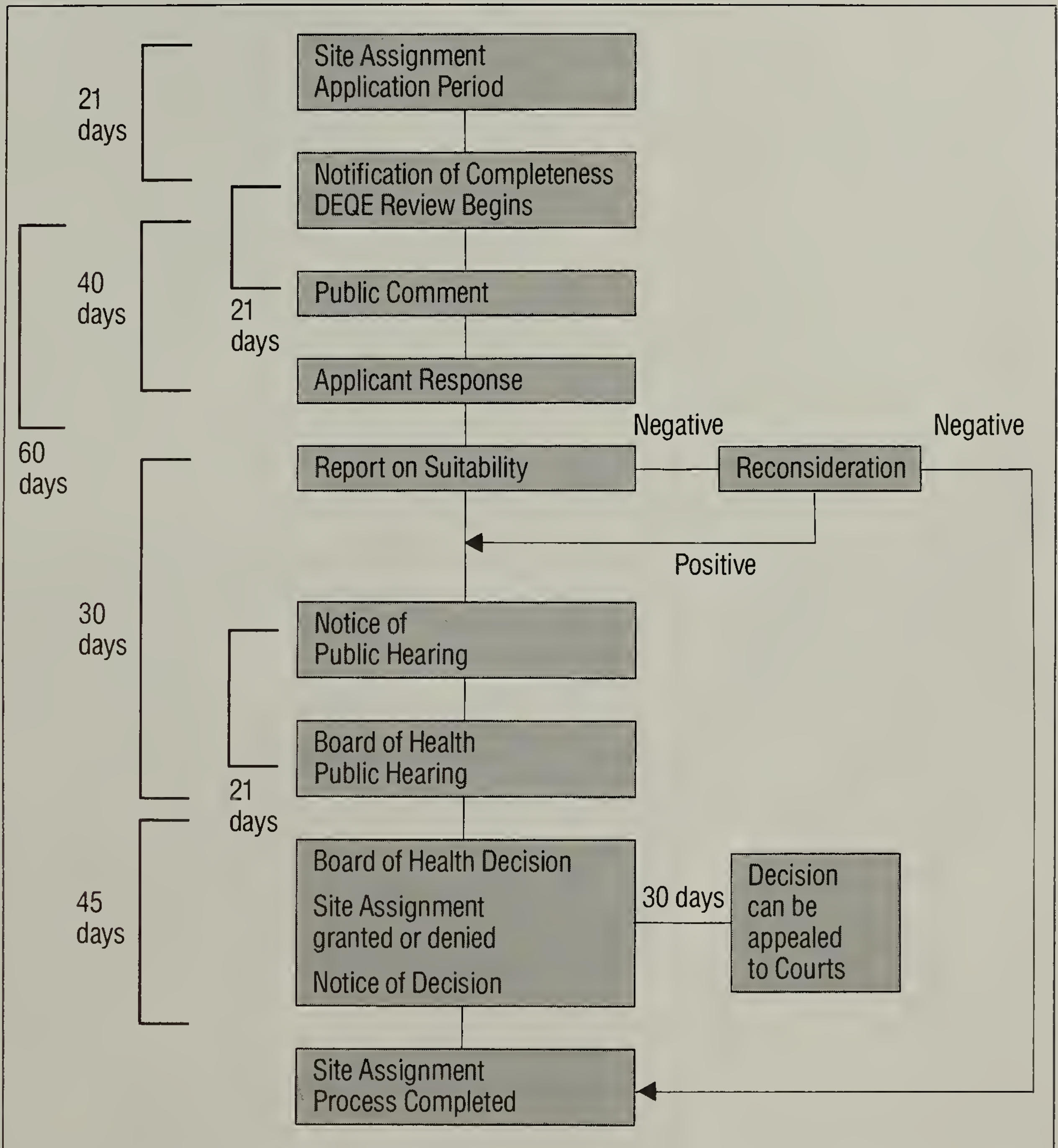
Chapter 5: Constructing The System characterizes the status of each component of integrated solid waste management and presents a vision of the future.

Source Reduction and Recycling:

Source reduction occurs before materials enter the waste stream. Recycling occurs after materials enter the waste stream but before they are combusted or landfilled. Together these two steps comprise the most important priorities in integrated solid waste management.

In order to achieve a 10% reduction in waste by the year 2000, the plan calls for reallocation of resources, changes in manufacturing and packaging designs and changes in consumer behavior. Packaging Tax programs and deposits for such items as tires and automobile batteries are potential legislative waste reduction options currently under consideration.

DEQE's Solid Waste Management Facility Site Assignment Process



This chart illustrates the site assignment application process which is depicted in abridged form on the previous chart.

The chapter describes the steps DEQE is taking to develop recycling and composting in the Commonwealth, including:

- establishment of a network of private and public regional recycling facilities
- market development
- 100% composting of leaves and yard waste
- an aggressive plastics recycling program.

Solid Waste Combustion:

Today there are six solid waste combustion facilities on-line in Massachusetts. These facilities, along with the two nearing completion, have increased disposal capacity dramatically. Some thirteen additional proposals to construct facilities are at various stages of siting and environmental review.

Greatly increased capacity to burn

solid waste would effectively discourage development of re-use and recycling programs. It is time to assess the proper role solid waste combustion will play in the years ahead.

Over the next year, DEQE will perform this assessment. During the one-year examination, the DEQE will continue to review the environmental impact reports for those combustion facilities which are in the MEPA process, and it will identify opportunities to maximize the use of waste reduction and recycling in those proposals. The DEQE will not issue operating permits during this assessment period for new facilities or expansions which have not already received a conditional or draft permit.

At the completion of this one year period, and as part of the final master plan, DEQE will permit only those facilities where there is a need for new capacity and whose proposals represent the maximum possible reduction and recycling of waste.

Landfill Disposal:

Under its Integrated Solid Waste Management Strategy, the DEQE expects a major decline in the landfilling of MSW. The DEQE has several programs to accomplish this:

- DEQE has identified 38 landfills that already may be threatening the quality of public water supplies; these 38 will receive priority consideration for grants. The Agency will conduct environmental assessments at all 700 remaining landfills, and will award grants and loans to municipalities whose facilities require further assessment or remediation.
- Dwindling capacity and higher disposal costs often result in illegal dumping. DEQE recently formed an Environmental Crimes Unit (ECU) to track and prosecute polluters. As enforcement efforts become more visible, illegal dumping will become a less attractive option.
- The DEQE has identified the half mile radius surrounding a public well as the area through which contaminants are likely to reach the well. It is DEQE's intention to prohibit the siting of new solid waste facilities, phase out existing landfills and restrict the siting of non-disposal solid waste facilities in this zone.

Chapter 6: The Conclusion summarizes the key elements of the plan and identifies the questions the Commonwealth faces in preparing a plan for solid waste management in the 21st century.

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Department of
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Solid Waste Management
1 Winter Street
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Daniel S. Greenbaum
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